

J. M. PRIMM.

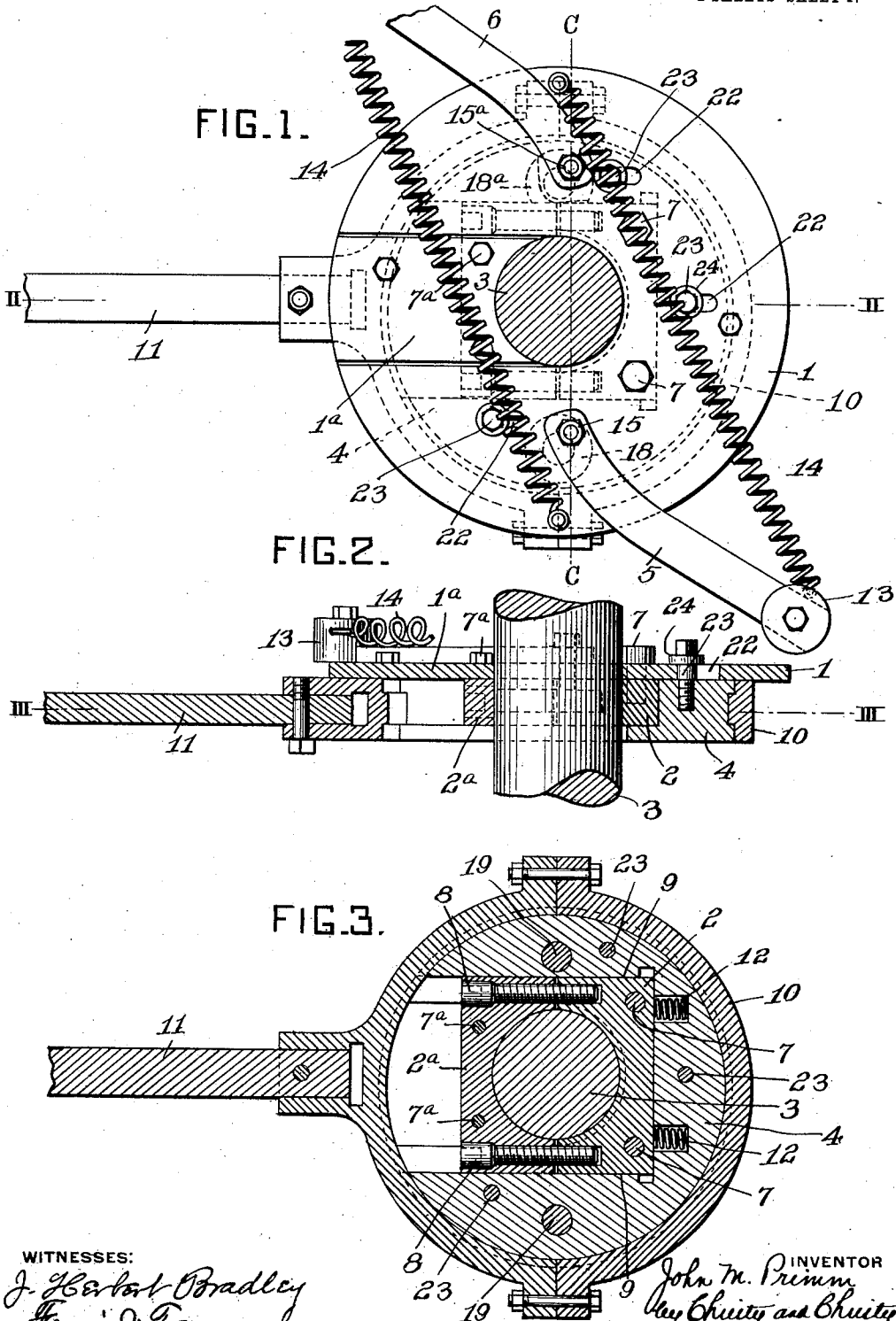
GOVERNOR.

APPLICATION FILED MAY 3, 1912.

1,057,271.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

J. Herbert Bradley
Francis J. Tomason

John M. Primm INVENTOR
Ray Chutey and Chutey Attys

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FIG. 4.

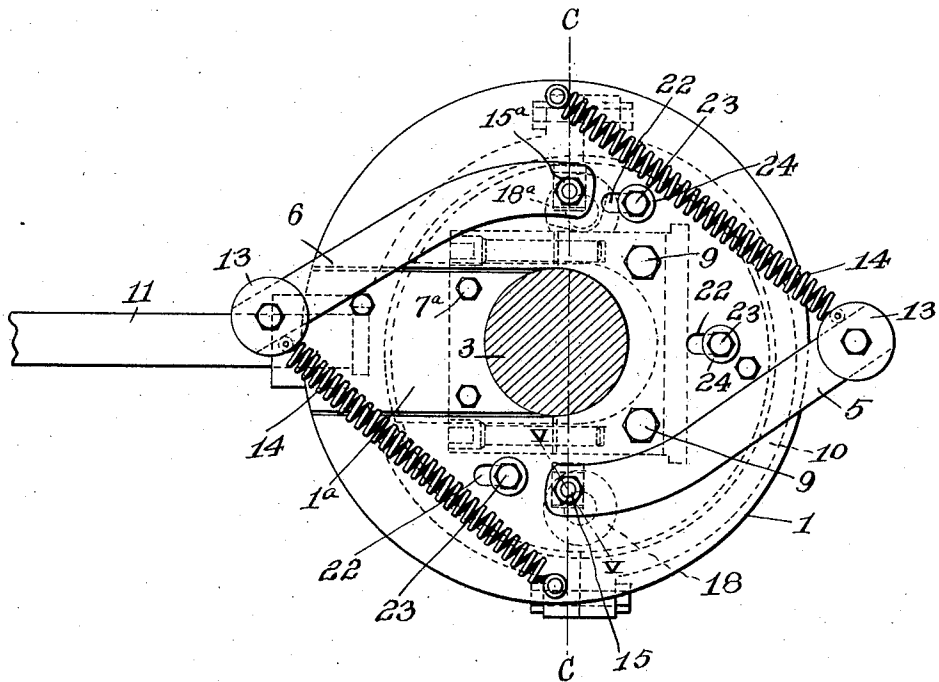
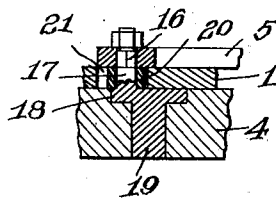


FIG. 5.



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UNITED STATES PATENT OFFICE.

JOHN M. PRIMM, OF LIMA, OHIO, ASSIGNOR TO THE POWER MANUFACTURING COMPANY, OF LIMA, OHIO, A CORPORATION OF OHIO.

GOVERNOR.

1,057,271.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed May 3, 1912. Serial No. 694,813.

To all whom it may concern:

Be it known that I, JOHN M. PRIMM, residing at Lima, in the county of Allen and State of Ohio, a citizen of the United States, have invented or discovered certain new and useful Improvements in Governors, of which improvement the following is a specification.

My invention relates to governors, adapted to adjust, with relation to the speed of a rotary member, the amount of eccentricity of an eccentric, carried by such rotary member.

The object of my invention is to provide a governor which will be simple and durable in construction, efficient in operation, and which may be easily adjusted to any position upon a rotary member.

A further object of my invention is to provide a governor which may be easily secured to and removed from its operative position upon a rotary member.

In the accompanying drawings, which form part of my specification, I have illustrated the preferred embodiment of my invention.

In the drawings Figure 1 is an elevation of the governor secured to a rotary shaft, and in this figure the parts of the governor are shown in their proper relative position for a high speed of rotary shaft; Fig. 2 is a sectional plan view taken on the line II—II, Fig. 1; Fig. 3 is a sectional elevation taken on the line III—III, Fig. 2; Fig. 4 is an elevation of the governor showing the parts thereof in their proper relative position when the shaft is stationary or revolving slowly; and Fig. 5 is a sectional view taken through the pivot point of the lower lever arm, the plane of section being indicated by the line V—V, Fig. 4.

In the several figures like numerals are used to designate like parts.

The governor, particularly shown and described herein, is well adapted to control the operation of oil injecting pumps used on fluid hydro-carbon internal-combustion engines; and I have illustrated such use thereof in my application, Serial No. 694,811.

In order to effect a substantially constant speed of such engines, it is desirable to diminish the quantity of fuel pumped into the combustion chamber thereof as the speed of the engine increases. To such an end the governor shown herein is arranged to move

an eccentric from maximum to minimum points of eccentricity as the speed of the engine increases, so that the extent of reciprocation of a rod moved by such eccentric to operate an oil injection pump will be diminished as the speed of the engine increases.

In the illustrated embodiment of my invention, a lever supporting block, 1, 2, is clamped to a rotary shaft 3; an eccentric or ring-carrying member 4 is slidably mounted upon the said block, and weighted arms 5 and 6 are pivoted in the said block and are adapted to engage and move the said eccentric with relation to the said block as the speed of the shaft 3 increases and the arms are thrown outwardly by centrifugal force.

To the end that the block 1, 2, and the parts carried thereby may be easily clamped to, and adjusted upon, the shaft 3, the said block may be made in two parts consisting of plates 1 and 2 fastened together by screw-bolts 7, and plates 1^a and 2^a fastened together by screw-bolts 7^a. The two parts thus formed may be secured together and the governor clamped to the said shaft 3 by means of bolts 8, extending loosely through suitable holes in the plate 2^a, and into screw-threaded holes in the plate 2. The portion of the blocks formed by the plates 2 and 2^a forms sliding surfaces 9, upon which the eccentric 4 is movably sustained; and upon the said eccentric a split ring 10 may be loosely mounted, and in turn secured to a rod 11. A suitable resistance to the sliding of the eccentric 4 upon the plate 2, 2^a to the position shown in Fig. 3 may be had by providing springs 12, seated in recesses in the said eccentric and bearing against the plate 2.

Since the two arms or levers 5 and 6 are substantially alike and provided for the sake of an even balance of parts, I will describe in detail only the arm 5. In this illustrative embodiment of my invention the arm 5 is provided with a suitable weight 13, and is held yieldingly in its position nearest the center of rotation of the shaft 3 by means of spring 14. To the opposite end of the arm there is rigidly secured a crank 15, which extends pivotally through the plate 2, and engages the sliding eccentric 4. The crank 15, particularly shown in Fig. 5, may consist of an angular shoulder 16 (adapted to be engaged by a correspondingly shaped

hole in the arm 5) a cylindrical extension 17 of said angular portion, a disk 18 eccentrically disposed with relation to the said shoulder, and a cylindrical portion 19 concentric with the said disk 18. The disk 18 and its extension 19 are adapted to fit loosely and rotatably into a correspondingly shaped recess in the eccentric 4; and, in order to provide the necessary loose play for the operation of the governor, the cylindrical portion 17 may be pivoted in the plate 2 through an interposed block or bushing 20 slidable in the slot 21 of the said plate.

The crank 15^a, while not identical in form to the crank 15, is the same as such crank in all its essential features. The difference between the two cranks is that, in the crank 15^a the portion 18^a is not a complete disk, such a construction being desirable to the end that the governor will not be unnecessarily large.

In order to secure the eccentric 4 to the block 1, 2, and at the same time permit of a relative movement of the two said parts, I preferably provide the plate 1 with slots 22, adapted to loosely receive screw-bolts 23, which may have screw-threaded attachment to the plate 4, and may have shouldered heads 24 adapted to bear upon the said plate 1.

The operation of the governor may be well understood by a comparison of the positions of the several parts when the eccentric is at its two extreme positions. In Fig. 4 of the drawings the parts of the governor are shown in the relative positions they may occupy when the shaft is stationary or revolving slowly. As shown therein the screw-bolts 23, which are connected to the eccentric 4, are at the extreme right of the slot 22; the springs 14, aided indirectly by the springs 12, hold the weighted arms 5 and 6 at their positions nearest to the center of the shaft 3; and the centers of the disk 18 and cylindrical extension 19 thereof lie to the right of the line C C which passes through the centers of the shoulders 16. As the speed of the shaft 3 increases the arms 5 and 6 are subjected to greater centrifugal force and move outwardly against the tension of the springs 14, as well as the compression of the spring 12. The extreme outward position of the arms is shown in Fig. 1 of the drawings, wherein it will be seen that the screw-bolts 23 are at the extreme left of the slots 22, the springs 14 are under substantial tension stress, the spring 12 under compression stress, and the centers

of the disk 18 and the cylindrical extension 19 lie to the left of the said line C C. As the arms 5 and 6 move from one position to another the bushings 20 will slide within the slots 21 and the pivot points of the arms 5 and 6 will be moved accordingly.

It will be apparent from the above description that, in this specific disclosure, the amount of adjustment of the eccentric 4 may be varied to the equivalent of the distance between the centers of a disk 18 in its extreme right and left positions with relation to the line C C.

I claim as my invention:

1. In a governor, the combination with a rotary member, of a block secured to said member and circumferentially adjustable thereon, an eccentric movably mounted with relation to said block but rotatable therewith, and a weighted lever pivoted in said block and operatively engaging said eccentric, said lever being carried by and movable with said block and eccentric.

2. In a governor, the combination with a rotary shaft of a divided block removably clamped to said shaft and circumferentially adjustable thereon, an eccentric slidably mounted on said block but rotatable therewith, and a yielding weighted lever pivoted in said block and operatively engaging the eccentric therethrough, said lever being supported solely by said block and eccentric.

3. In a governor, the combination with a rotary member, of a block adjustably secured to said member, an eccentric movably mounted on said block but rotatable therewith, and a weighted lever pivoted in a bushing slidably mounted in said block, said arm having a disk-shaped projection eccentric with relation to the pivot point of said lever and rigidly secured thereto, said projection engaging a correspondingly shaped recess in said eccentric.

4. In a governor, the combination with a rotary shaft, of a two-part block, means for clamping the said block to the said shaft, an eccentric, and a weighted lever pivoted in the said block and operatively engaging said eccentric, the said lever being supported solely by the said block and eccentric, substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN M. PRIMM.

Witnesses:

JOHN BRENNEMAN,
JOHN L. CABLE.